Contribution ID: **480**   Type: **poster**

Generic logging layer for the distributed computing

Wednesday 29 September 2004 10:00 (1 minute)

Most HENP experiment software includes a logging or tracing API allowing for displaying in a particular format important feedback coming from the core application. However, inserting log statements into the code is a low-tech method for tracing the program execution flow and often leads to a flood of messages in which the relevant ones are occluded. In a distributed computing environment, accessing the information via a log-file is no longer applicable and the approach fails to provide runtime tracing.

Running a job involves a chain of events where many components are involved often written in diverse languages and not offering a consistent and easily adaptable interface for logging important events.

We will present an approach based on a new generic layer built on top of a logger family derived from the Jakarta log4j project that includes log4cxx, log4c, log4perl packages. This provides consistency across packages and framework.

Additionally, the power of using log4j, is the possibility to enable logging (or features) at runtime without modifying the application binary or the wrapper layers. We provide a C++ abstract class library that serves as a proxy between the application framework and the distributed environment. The approach is designed so that the debugging statements can remain in shipped code without incurring a heavy performance cost. Logging equips the developer with as detailed context as necessary for application failures, from testing, quality assurance to a production mode limited amount of information. We will explain and show its implementation in the STAR production environment.

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Session Classification: Poster Session 2

Track Classification: Track 4 - Distributed Computing Services